Missouri Conservationist

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[NOTE TO OUR READERS]

Taking Action for Tomorrow's Resources

A fundamental tenet of the Conservation Department for more than 75 years has been: "The hope of wildlife restoration and conservation in Missouri lies in the three-way cooperation of the state, the landowner, and the public, based upon adequate information and mutual understanding." Following this tenet continues to serve Missourians well, and it has resulted in many significant conservation advancements.

Missouri's forest, fish, and wildlife resources enhance our quality of life and connect us to our outdoor heritage. These resources support approximately 90,000 Missouri jobs and provide a $12.4 billion annual boost to the state's economy. Conservation continues to be a wise investment.

One of the Department's five broad goals is to ensure healthy and sustainable forest, fish, and wildlife resources throughout the state.

Monitoring wildlife diseases and minimizing their adverse effects is a Department priority. Examples include whirling disease in trout, thousand cankers disease in forests, and chronic wasting disease in deer. Wildlife resources we enjoy today could be lost if we fail to take preventive actions.

It is essential for the Department to focus on all species, and their varying needs in different habitats, to ensure sustainable populations. For example, ensuring healthy fish populations requires attention to our rivers, streams, and lakes, as well as commercial facilities. Ensuring healthy forests requires management considerations for forests in rural and urban areas, as well as in commercial nurseries. The same holds true for one of our state's most popular wildlife species — white-tailed deer. Missouri's deer herd includes both free-ranging and captive animals.

White-tailed deer are an important part of many Missourians' lives and family traditions, including 520,000 deer hunters and more than 2 million wildlife watchers. In addition, Missouri's deer herd is an important economic driver supporting 12,000 Missouri jobs and providing $1 billion annually to state and local economies. Missouri offers some of the best deer hunting in the country.

Chronic wasting disease has been found in both captive and free-ranging deer in north-central Missouri. The Department has been working with hunters, landowners, conservation partners, and businesses to detect cases of this disease and limit its spread. Regulation changes associated with managing the free-ranging deer herd have been implemented in six north Missouri counties, and restrictions have been placed on bringing hunter-harvested deer, elk, and moose carcasses into the state.

In addition, the Department has been working with the captive deer industry, landowners, and citizens to review existing management practices and regulations for captive deer. These efforts have identified portions of *Wildlife Code* regulations that need to be enhanced. These include fencing standards, animal testing standards, inventory requirements, and interstate transport.

The Department currently permits 44 big-game hunting preserves and 224 class-one wildlife breeders to hold captive deer. More than 200 captive breeders hold fewer than 50 deer, while only eight permittees hold more than 100 deer. While small in overall numbers, captive deer and how they are permitted must be considered to ensure the long-term health of Missouri's deer population.With or without the the threat of chronic wasting disease, areas of the *Wildlife Code* need to be enhanced to address risks associated with captive deer.

Existing fence standards for captive deer need to be enhanced. For example, captive animals can become free-ranging when trees fall on single fences or when streams wash out crossing fences. The Department is considering a double fence requirement.

There is also a need for real-time information on all captive deer herds. Inventory information should be up to date on each deer and clearly document where a specific animal came from and when it was removed (shot or sold) from the herd. Without this detail, the ability to complete "trace back" and "trace forward" herd checks is not possible when issues such as disease occur.

For several years, the Department has not moved free-ranging deer fawns beyond county borders. This is to help minimize potential disease risks. Many other states that allow captive deer herds have taken steps to close their borders to interstate transport of deer, including Florida and New York. The Department is considering closing Missouri to interstate transport of deer. Captive deer would need to be obtained from captive herds currently in our state.

Staff are also considering improvements to animal testing standards and contingency requirements in the event of disease outbreaks in captive herds.

The Department has conducted public meetings and gathered comments from Missourians regarding possible *Wildlife Code* changes associated with holding captive deer. Whether you support or oppose the proposed regulation changes, please share your views, be familiar with this issue, and encourage other Missourians to be informed. Find more information and share your comments on the Department's website at ***mdc.mo.gov/node/16478***.

Your input and involvement will help us keep healthy and sustainable forest, fish, and wildlife resources for future generations.

Robert L. Ziehmer, director

FEATURES

Cover: Common sneezeweed at Grassy Pond Natural Area in Carter County, by Noppadol Paothong. Read more about a sampling of Missouri's natural areas starting on Page 15.
17–40mm lens • f/10 • 1/60 sec • ISO 400

DEPARTMENTS

WHAT IS IT?

Our photographers have been busy exploring the intricacies of the Missouri outdoors. See if you can guess this month's natural wonder. The answer is revealed on Page 7.

NOPPADOL PAOTHONG

Patterning Questions

Thank you for the article about getting ready for turkey season [March; *Turkey Tryouts*]. It can be an exciting time — almost as exciting as the month before Christmas in my opinion. However, I do differ with your suggestion under "Test Your Ammunition" on Page 21, in particular your point of aim. You say to aim at the wattles on the turkey head target. The best place to aim your shotgun on a turkey is at the neck at a point between the head and body. Try it, you may kill more birds.

Michael Davisson, via Internet

Author's Note: To make efficient use of a shotgun pattern when turkey hunting we recommend to aim at the base of the neck (where the head meets feathers) on a turkey. My reference to aiming at the wattles could have used more clarification. On a turkey, the wattles typically refers to the lower, most fleshy portion of a turkey's head. Aiming at the base of the neck allows for some room for error. If you aim too low on the neck you risk putting pellets into the breast. If you aim too high (at the top of the turkey's head for example) you run the risk of your pattern being too high. Of course, this all depends on the pattern of your shotgun, and in particular, the balance of the shotgun's pattern. In most field (hunting) shotguns, a balance of 50/50 is recommended. This means that if you were to aim at the horizontal line on a piece of paper, 50 percent of the pattern would be above the line and 50 percent would be below the line. Patterning sessions on paper will reveal if you need to adjust your aiming point, particularly if you are not reaching the minimum pellet counts required to lethally harvest a turkey. Thank you for taking the time to send in your comment. Good luck turkey hunting this spring! —Jake Hindman, Outreach and Education district supervisor

Reader Photo Springtime Swallowtail

Janet Strief, of Lebanon, captured this image of a giant swallowtail butterfly alighting on a pair of yellow coneflowers. "I love photography as a way to relax," said Strief. "I prefer nature with a lot of color, but I've discovered I like taking black and white abstract photos as well." Strief said her goal is to eventually visit each park and conservation area in the state.

Rave Range Reviews

Yesterday, I took my kids to the August A. Busch Memorial CA Shooting Range to introduce them to the shooting sports. They absolutely loved it. I'm a former law enforcement officer and would like to acknowledge your shooting range staff. I've never been more comfortable on a range. Your shooting range cadre are professional and confident. They supervise and run the operation very efficiently.

Besides my state-side law enforcement experience, I've spent seven years overseas working as an adviser for the Department of State. I've been on a lot of ranges. Your guys are really good. Please pass on to the range cadre at August A. Busch a big thank you from my family and I for making my kids' first experience on a range an educational one, as well as safe and enjoyable.

Bryan Stanley, St. Louis

Teal-rific Photo

Danny Brown's photos and descriptions of how he got those photos are absolutely wonderful. They draw me to that section immediately, and when I decide it's time to recycle the magazine, I usually save the photos. The green-winged teal [March; Page 30] is so incredibly beautiful, I just had to write and thank you.

Cathy Tallen, via Internet

Dogwood Splendor

I read your article on the spectacle of Missouri dogwoods that will be appearing soon this spring [April; Page 6]. I have been on some of the routes that you mentioned and must agree that if you can synchronize your trip with the peak of the dogwood blooms, it is truly a breath-taking experience. I must admit though, I have never taken Highway 63 from Kingdom City to Thayer. Apparently, it's not well marked. Other than that, great job.

Larry Jones, Fulton

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Equal opportunity to participate in and benefit from programs of the Missouri Department of Conservation is available to all individuals without regard to their race, color, national origin, sex, age, or disability. Questions should be directed to the Department of Conservation, PO Box 180, Jefferson City, MO 65102, 573-751-4115 (voice) or 800-735-2966 (TTY), or to the U.S. Fish and Wildlife Service Division of Federal Assistance, 4401 N. Fairfax Drive, Mail Stop: MBSP-4020, Arlington, VA 22203.

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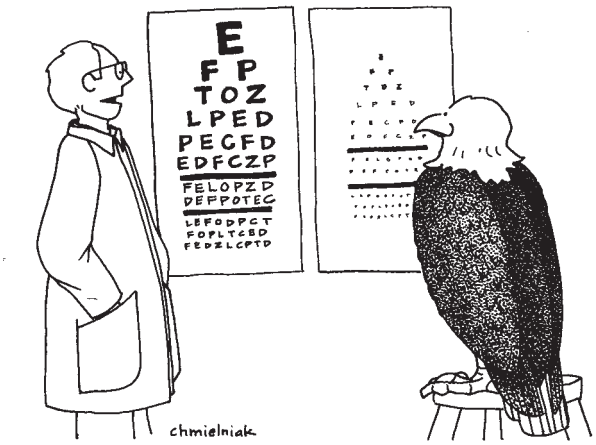

"Please read the letters from the chart on the right."

Agent Notes

Babies in the Backyard

CONSERVATION AGENTS RECEIVE hundreds of calls each spring and summer from people who find young birds, raccoons, opossums, deer (fawns), and a variety of other wildlife they believe have been abandoned. Most young animals found in the wild aren't deserted. Their parents simply are not visible. For instance, a doe will usually visit her fawns only long enough to nurse them. By staying away the rest of the time, they avoid drawing predators' attention to their young.

Birds often grow too large for their nests before they are able to fly. They fall or jump from the nest and the parents continue to bring food for them on the ground until they can fly. If you have a flightless baby bird in your backyard, help it by keeping your pets indoors. If a child brings home a baby bird or rabbit, return the animal as quickly as possible to the place where it was found. If young are raised in captivity and released back into the wild, their chance of survival is slim.

When you remove young animals, they are more likely to die, and it is also illegal. With a few exceptions, wildlife cannot be removed from the wild and kept in captivity. Only wildlife rehabilitators are legally able to possess sick or injured wildlife.

Unfortunately, every spring many young animals do die; victims of predators, inclement weather, or just bad luck. Predators need food to survive, and nature produces more offspring than needed to sustain wildlife populations. Remember, the best way to help these young animals is to look but don't touch.

Don Clever is the conservation agent in Marion County. If you would like to contact the agent for your county, phone your regional conservation office listed on Page 3.

HUNTING AND FISHING CALENDAR

FISHING	OPEN	CLOSE
Black Bass from Ozark Streams	05/24/14	02/28/15
Bullfrogs and Green Frogs	Sunset	Midnight
	6/30/14	10/31/14
Nongame Fish Snagging	03/15/14	05/15/14
Paddlefish on the Mississippi River	03/15/14	05/15/14
	09/15/14	12/15/14
Trout Parks	03/01/14	10/31/14

HUNTING	OPEN	CLOSE
Coyote	05/12/14	03/31/15
Deer		
Archery	09/15/14	11/14/14
	11/26/14	01/15/15
Firearms		
Urban Portion	10/10/14	10/13/14
Early Youth Portion	11/01/14	11/02/14
November Portion	11/15/14	11/25/14
Antlerless Portion (open areas only)	11/26/14	12/07/14
Alternative Methods Portion	12/20/14	12/30/14
Late Youth Portion	01/03/15	01/04/15
Groundhog (woodchuck)	05/12/14	12/15/14
Pheasant		
Youth	10/25/14	10/26/14
North Zone	11/01/14	01/15/15
Southeast Zone	12/01/14	12/12/14
Quail		
Youth	10/25/14	10/26/14
Regular	11/01/14	01/15/15
Rabbit	10/01/14	02/15/15
Squirrels	05/24/14	02/15/15
Turkey		
Archery	09/15/14	11/14/14
	11/26/14	01/15/15
Firearms		
Youth	04/12/14	04/13/14
Spring	04/21/14	05/11/14
Fall	10/01/14	10/31/14
Waterfowl	please see the *Waterfowl Hunting Digest* or see ***mdc.mo.gov/node/3830***	

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code* and the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations, The Spring Turkey Hunting Regulations and Information,* the *Fall Deer and Turkey Hunting Regulations and Information*, the *Waterfowl Hunting Digest,* and the *Migratory Bird Hunting Digest*. For more information visit ***mdc.mo.gov/node/130*** or permit vendors.

ASK THE Ombudsman

Slime mold

Q. I found a strange-looking growth on the wood chip mulch of my flower beds. Can you identify it and tell me how to get rid of it?

That organism is a type of slime mold that is commonly referred to as "dog vomit." Formerly considered a type of fungus, the many species of slime molds are now classified in a different kingdom than fungi. They feed on microorganisms such as bacteria that are associated with decaying vegetation. Normally single-celled organisms, when food or moisture is in short supply, slime molds will join together and move en mass on a layer of slime. As with snails and slugs, a residue of slime indicates their travel path. Like other organisms that reproduce by wind-blown spores, the slime mold's spores are widespread and await suitable conditions to begin growing. I don't know how to get rid of a slime mold other than physical removal of the mass that is visible, which may only work temporarily. Slime molds tend to frequent wood mulch for a few seasons as the wood chips begin to decompose. They will eventually stop appearing unless you continue to add fresh wood chips to restart the decomposition process.

SANDRA JENSEN, CORNELL UNIVERSITY, BUGWOOD.ORG

Q. Is it legal to keep a fox as a pet in Missouri?

It depends on the species of fox and where it is obtained. The *Wildlife Code of Missouri* contains regulations primarily for wildlife native to Missouri, which includes red fox, gray fox, and variants of those species, such as the silver fox. It is not legal to bring a live red, gray, or silver fox into Missouri. They may only be purchased from a licensed Missouri wildlife breeder and cannot be taken from the wild to hold in captivity. An annual permit is required to obtain a native fox and requirements for holding the animal in captivity must be met prior to being issued the permit. They are not allowed to run free like a pet. Nonnative species, such as arctic fox, are not regulated by this department. Other state and federal agencies have regulations regarding nonnative foxes. Depending on where you live, there may also be county or municipal restrictions on keeping a fox as a pet.

Q. Can wild-collected morel mushrooms be legally sold in Missouri?

That depends on where the morels were collected. Most public lands where mushrooms may be collected specify that collecting is allowed only for personal consumption. It is unlawful to collect in those areas for commercial purposes, such as for selling the mushrooms. Morels collected from private land with the permission of the landowner may be legally sold.

Ombudsman Tim Smith will respond to your questions, suggestions, or complaints concerning the Conservation Department.
Address: PO Box 180, Jefferson City, 65102-0180
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by Jim Low

White-tailed deer

Latest Tests Find No CWD-Positive Deer

Tests on 3,666 free-ranging deer harvested during and after the 2013 deer hunting season found no evidence of chronic wasting disease (CWD).

The total number of confirmed cases in Missouri's free-ranging deer remains limited to 10 found in 2012 and early 2013. All were from a small area of northwest Macon County near where CWD was confirmed in 10 captive deer at a private hunting preserve in 2012. Missouri's first case of CWD was discovered in 2010 in a captive deer at a private hunting facility in southeast Linn County owned by the same private hunting preserve.

Conservation Department State Wildlife Veterinarian Kelly Straka says the most recent round of testing makes her cautiously optimistic about prospects for limiting the spread of the disease.

"Our efforts to limit the spread of CWD may be working," says Straka, "but the threat of this infectious disease remains significant. Therefore, continued surveillance is important."

Of the 3,666 deer tested, 1,520 were from the CWD Containment Zone of Chariton, Randolph, Macon, Linn, Sullivan, and Adair counties. Of that number, 206 were from the 30-square-mile CWD Core Area around the private hunting preserve in Macon County where the first CWD cases were discovered in captive deer. The remaining 2,146 test samples were gathered from deer harvested outside of the six-county Containment Zone as part of the Conservation Department's ongoing statewide sampling effort.

The Conservation Department continues to work with landowners to harvest and test free-ranging deer in the CWD Core Area. The effort was done to monitor infection rates and help limit the spread of the disease from deer to deer by reducing local deer numbers.

"More than 90 percent of Missouri land is privately owned, so landowners are vital to deer management and to our ongoing efforts to limit the spread of CWD," Straka says. "We greatly appreciate the cooperation of local landowners in the CWD Core Area who participated in this effort. Their sacrifice in temporarily reducing local deer numbers is helping to protect the health of deer throughout the state."

Straka added that the Department will continue working with hunters and landowners to test harvested free-ranging deer for CWD during future deer seasons.

Missouri offers some of the best deer hunting in the country, and deer hunting is an important part of many Missourians' lives and family traditions. Infectious diseases such as CWD could reduce hunting and wildlife-watching opportunities for Missouri's nearly 520,000 deer hunters and almost 2 million wildlife watchers.

Deer hunting is also an important economic driver in Missouri and gives a $1 billion annual boost to state and local economies. CWD also threatens the investments of thousands of pri-

WHITE-TAILED DEER: NOPPADOL PAOTHONG

vate landowners who manage their land for deer and deer hunting.

CWD affects white-tailed deer and other members of the deer family. It is always fatal. No vaccine or cure for the disease exists. It spreads both directly from deer to deer and indirectly from infected soil and other surfaces. Deer and other cervids can have CWD for several years without showing any symptoms. After symptoms are visible, infected animals typically die within one or two months. Once well established in an area, CWD has been shown to be impossible to eradicate.

For more information on CWD, including what the Department is doing to limit the spread, and what hunters and others can do to help, visit ***mdc.mo.gov/node/16478***.

NWTF and CFM Honor Department Employees

The National Wild Turkey Federation (NWTF) honored two Conservation Department employees at its 38th annual convention February in Nashville, Tenn.

NWTF named Conservation Agent Jeff Berti, of Trenton, its 2013 National Law Enforcement Officer of the Year at the 38th NWTF Convention. He had also won NWTF's Missouri 2013 State Law Enforcement Officer of the Year Award. The honor recognized accomplishments that included documenting 248 resource violations and making more than 100 arrests.

Conservation Department Hunter Education and Shooting Range Coordinator Kyle Lairmore, Owensville, received the NWTF Wheelin' Sportsmen Volunteer of the Year Award for his work introducing people with disabilities to hunting and his service in many other NWTF projects.

Five Conservation Department staff members were also among honorees at the Conservation Federation of Missouri's (CFM) 78th annual convention in Jefferson City March 21.

CFM's Conservationist of the Year Awards Program honors individuals and organizations that make outstanding contributions in various conservation fields. Conservation Department workers honored this year were:

Hatchery Systems Manager James Civiello, Professional Conservationist of the Year.

Fisheries Management Biologist Craig Fuller, Water Conservationist of the Year.

Media Specialist Joanie Straub, Conservation Communicator of the Year.

Urban Forester Ann Koenig, Forest Conservationist of the Year.

Private Land Services Biologist Chris McLeland, Soil Conservationist of the Year.

Any resident of Missouri is eligible to be nominated for a Conservationist of the Year Award. Visit the CFM website at ***confedmo.org*** for a nomination form.

Pallid Sturgeon Spawning Documented

Efforts to restore one of Missouri's largest and most ancient fish took a giant step forward last

WHAT IS IT?

Killdeer

Charadrius vociferus

On Page 1 is a photo of a killdeer egg, and left is a newly hatched killdeer chick. Killdeer babies peck out of their eggs with coats of wet, downy feathers and eyes wide open. After their feathers dry, the fuzzy chicks are on the move. They leave their nest, which is on the ground, and follow their parents to grassy areas to catch their own dinner — a beakful of juicy insects. The chicks learn to fly when they are about 3 weeks old, but stay with their parents all summer. In order to lure predators away from their young, killdeer parents thrash about and pretend that their wings are broken. Once the threat is lured a safe distance from the nest, the killdeer flies off to safety.

— photograph by Noppadol Paothong

(continued from Page 7)

summer with the discovery of a tiny pallid sturgeon in the Missouri River north of Kansas City.

The pallid sturgeon, once a common inhabitant of Missouri's namesake river, declined to endangered status as a result of overfishing and pollution and also due to channelization, which eliminated most of its feeding and spawning habitat. In the 1990s, the Conservation Department, the U.S. Fish and Wildlife Service (FWS), the U.S. Geological Survey (USGS), and other states' conservation agencies launched efforts to save the species from extinction.

These efforts included trying to raise pallid sturgeon in captivity to augment the dwindling wild population. In 1992, workers at the Conservation Department's Blind Pony Fish Hatchery accomplished the first-ever captive reproduction of pallid sturgeon. Fish from that historic achievement were held at the hatchery until they were about 12 inches long to enhance their chances of survival. In April 1994, 7,000-plus captive-reared pallid sturgeon were released in the Missouri and Mississippi rivers.

Male pallid sturgeons do not spawn until they are 5 to 7 years old. Females first spawn at age 15 to 20. So the fish released in 1994 now are an active part of the gene pool. That was confirmed on April 2, 2013, when Conservation Department workers captured a tagged female pallid sturgeon from the 1992 cohort near Missouri City. The fish was full of mature eggs. After recording the fish's identity, they fitted it with an additional device to enable biologists to track its movements and record water temperature and depth data every 30 seconds.

On May 10, data coming from the fish indicated it was spawning. At the same time, biologists noted that a radio-marked male pallid sturgeon was in the same part of the Missouri River north of Kansas City. When the female returned downstream, biologists captured her again. An examination showed that it no longer carried eggs. That set biologists on a quest for evidence of reproduction.

They got their proof several days later when they collected a newly hatched pallid sturgeon downstream from the suspected spawning site. Genetic testing determined that it was the offspring of the radio-tracked, 21-year-old female pallid sturgeon.

Pallid sturgeon

PALLID STURGEON: CLIFF WHITE

The long-term goal of the pallid sturgeon restoration program is to establish a stable breeding population of 37 adult fish per mile of Missouri River. The current population is estimated at 3.8 to 6 per river mile.

Partial funding for the Conservation Department's pallid sturgeon restoration work came from the Federal Aid in Sport Fish Restoration program set up under the Wallop-Breaux Act of 1937. This law, along with the Federal Aid in Wildlife Restoration (Pittman-Robertson) Act of 1937, established excise taxes on hunting and fishing equipment to fund state conservation programs. To date, Missouri has received nearly $400 million from these programs.

Restoration can succeed only if the fish find suitable habitat. The Conservation Department has been working with the U.S. Army Corps of Engineers, the FWS, and the USGS to restore a small portion of shallow-water habitat and provide seasonal flows that once sustained the pallid sturgeon and a host of other fish and wildlife in the Missouri River. These efforts have been taken with care to accommodate other river uses, such as flood control, navigation, and the municipal and industrial water supply.

Funding for the Conservation Department's Missouri River Field Station in Chillicothe and partial funding for raising pallid sturgeon at Blind Pony Hatchery come from the U.S. Army Corps of Engineers' Missouri River Recovery Program.

Celebrate 25 Years of Stream Team

In 1989, a small group of anglers got fed up with trash marring the beauty of Roubidoux Creek. They decided to clean a section of the stream in Pulaski County. In doing so, they formed the first Missouri Stream Team. Twenty-five years later, the Roubidoux Fly Fishers Association — Stream Team 1 — is still going strong, and the movement they launched has exceeded even the most ambitious early goals. The Missouri Stream Team Program now boasts more than 4,000 Stream Teams with more than 85,000 volunteers.

The Missouri Stream Team Program is a citizen-led effort to conserve Missouri streams. Sponsored by the Missouri Department of Conservation, the Missouri Department of Natural Resources (DNR), and the Conservation Federation of Missouri (CFM), the Program focuses

Stream Team members clean up around the Missouri River. After 25 years, the Missouri Stream Team Program has more than 4,000 Stream Teams with more than 85,000 volunteers.

on education, stewardship, and advocacy for Missouri stream resources.

"The success of the Stream Team Program is a great example of how Missourians care about conserving fish, forests, and wildlife, and how the Conservation Department, DNR, and CFM work with citizens to conserve our natural resources," said Department Fisheries Biologist Amy Meier, one of several Stream Team biologists with the Conservation Department. "Stream Team activities also provide unique opportunities to discover nature in new and exciting ways."

Meier added Stream Teams' ongoing work has enormous positive impacts on stream health. That work includes:

- Removing 20 million pounds of trash from Missouri waterways
- Planting 250,000 trees along streams
- Conducting 25,000 water-quality monitoring trips
- Stenciling more than 17,000 storm drains with the message, "Dump no Waste. Drains to Stream."

To celebrate its 25th anniversary, Missouri Stream Team invites all Teams and new volunteers to participate in "25 Days of Stream Team" events around the state. Running from March to October, events include stream cleanups, monitoring work, education activities, storm-drain stenciling, and more. For a calendar of events, visit ***mostreamteam.org***.

STREAM TEAMS: NOPPADOL PAOTHONG

DID YOU KNOW?

Missourians care about conserving forests, fish, and wildlife.

Visit a Natural Area

» ***The Missouri Natural Areas program*** works to conserve the best remaining examples of Missouri's forests, woodlands, savannas, prairies, glades, cliffs, wetlands, caves, springs, streams, and rivers.

» ***More than 180 areas and 75,000 acres*** are designated natural areas across the state.

» ***More than 350 Missouri species*** of conservation concern are provided habitat through the Natural Areas program.

» ***Visit a natural area*** for recreation. Opportunities include hiking, nature photography, bird watching, nature study, hunting, and fishing.

» ***Plan ahead*** by visiting ***mdc.mo.gov/node/2453*** to find a complete listing of areas and to learn more about what each area has to offer. Or, purchase the beautiful, user-friendly guide *Discover Missouri Natural Areas: A Guide to 50 Great Places*. Author Mike Leahy, the Conservation Department's natural areas coordinator, provides natural history information that brings to life the outstanding geological, biological, and ecological features of each area. Easy-to-use maps and stunning photographs compliment the text. Purchase this guide at conservation nature centers or ***mdcnatureshop.com***.

» ***Partners make it happen*** — the Conservation Department, the Missouri Department of Natural Resources, the Mark Twain National Forest, the Ozark National Scenic Riverways, the U.S. Fish and Wildlife Service, and The Nature Conservancy all work together to make the Natural Areas program successful.

The Stream Team Program is open to anyone in Missouri with an interest in streams. It offers activities for individuals, families, schools, and communities regardless of age, background, or ability. For more information, visit ***mostreamteam.org*** or ***facebook.com/mostreamteams***.

Champion Black Maple Found in Harrison County

A black maple tree in rural northwest Missouri has joined a list of giants. The black maple growing in a field edge in southeastern Harrison County recently qualified for the list of Missouri State Champion Trees.

The Conservation Department keeps a list of champions to celebrate the beauty and economic benefits trees provide in forests, fields, and lawns. Champions are determined by a formula that takes into account trunk circumference, height, and crown spread. The new champ is 58 feet tall, with a crown spread of 81 feet and a trunk circumference of 115.8 inches. The tree is owned by John Milligan of rural Gilman City. Milligan was recently presented with a state champion tree plaque by Jason Severe, a Conservation Department forester.

Black maple trees are similar to sugar maples but have wider leaves that droop. Black maple twigs more than 2 years old have a waxy coating.

For more information on Missouri State Champion Trees, visit ***mdc.mo.gov/node/4831***.

TOP PREDATO

The management and pursuit of smallmouth bass and goggle-eye

BASS of OZARK STREAMS

BY JEN GIRONDO, CRAIG FULLER, AND RICK HORTON

PHOTOGRAPHS BY DAVID STONNER

When it comes to fishing in Ozark streams, smallmouth bass and goggle-eye are the species to catch. At the top of the food chain, they consume great quantities of prey and few other fish prey upon them as adults. They fight like the dickens on the end of a line, and they are a source of envy and legend for many anglers. Learning the details of these fishes' lives helps biologists manage quality fisheries and improves anglers' success.

Where to Find Them

Smallmouth bass and goggle-eye have similar distributions in the U.S., occurring mainly in the upper Midwest. In Missouri, they are typically found in greatest numbers in streams, but smallmouth bass also do well in reservoirs. The permanent flow, clear water, abundant cover, and silt-free bottoms of many Ozark streams and a few northeastern Missouri streams provide the needed habitat for these species to thrive. In addition to rocky or woody in-stream structures and clear water, cool temperatures are important for these species; smallmouth typically don't do well in water higher than 85 degrees Fahrenheit, so shade and groundwater inputs (springs) are important in their conservation and management.

Access to Missouri streams is widely available through Conservation Department lands and accesses, other state agency and federal lands, road rights-of-way, and by securing permission from private streamside landowners. Many Ozark streams are accessible through commercial outfitters who rent canoes, kayaks, or rafts for floating and fishing. Anglers can fish from the bank, wade, or float. Floating is most often by canoe and kayak, but on larger streams, powered boats can be used. Respect for other stream users and streamside landowners is key to ensuring that Missouri's streams remain available for all Missouri citizens to enjoy.

Best Baits Presentation

Catching smallmouth and goggle-eye on an Ozark stream can be simple. During the day you can find them in deep water near the bottom, usually near boulders and snags that lie in noticeable current. They are most active at night, when they will often strike noisy surface lures. Any small plug will catch them, but a deep-running crawdad imitator is one of the most consistent. Both species also seem to be particularly fond of soft plastic baits. A favorite of many anglers is a 3-inch curly-tailed grub or 4-inch worm, especially those that have been impregnated with salt. Almost any color will work, but darker colors seem more productive. Any sort of tackle is fine, but many anglers prefer using an ultralight rod matched with an open-face spinning reel and spooled with 4-pound test line.

Any sort of tackle is fine, but many anglers prefer using an ultralight rod matched with an open-face spinning reel and spooled with 4-pound test line.

Smallmouth bass and goggle-eye feed on similar prey — primarily crayfish, followed by insects and small minnows. Having adequate prey available ensures that fish will grow from one year to the next, and having good growth rates ensures that abundant numbers of juvenile fish will be ready to move into more desirable sizes for anglers as the years go by.

Building Better Fisheries

A fish is only concerned with its most immediate needs — food, a protected, cool place to rest, and a place to

Smallmouth and Goggle-Eye Fish Facts

GROWTH On average, it takes a smallmouth bass five years to attain a length of 12 inches, and a goggle-eye five years to reach 8 inches. Growth may be faster or slower depending on a fish's habitat — in reservoirs and some larger streams, some smallmouth bass can reach 12 inches in three years, but in small streams it may take six or more years to reach 12 inches. Few smallmouth bass live more than 7 years, and few goggle-eyes live more than 5 or 6 years.

SOURCES OF MORTALITY Ozark streams are not easy places to live, and there are many sources of mortality for both smallmouth and goggle-eye over a year's time: disease, difficulty finding enough food, changing water temperatures and levels, loss of protective resting places, natural predators, etc. Anglers sometimes make up part of that mortality. Mortality rates describe how many fish survive from one year to the next, and managers need to understand how much mortality is attributable to anglers compared to "natural" sources when considering the effects of potential fishing regulations.

ride out flood events. However, biologists are concerned about entire populations, and they know that multiple nesting areas, plentiful juvenile habitat (think protection from predators), and abundant adult resting and feeding areas ensures continued survival on a larger scale. All of these habitat components require healthy watersheds and streams with relatively high gradients, rocky substrates, and timbered riparian corridors, and they are determined by the stream's geology and surrounding land use. Recent studies by the National Park Service and University of Missouri (May 2013; *Tracking River Smallmouth*) have shown the additional importance of springs that buffer water temperature fluctuations. They seem to reduce stress on smallmouth and goggle-eye during extreme hot and cold periods. The studies highlight critical habitat areas that need to be conserved to sustain quality smallmouth and goggle-eye populations in the future.

Even in the best habitat, some smallmouth or goggle-eye simply will not survive from one year to the next.

REGULATIONS AND SPECIAL MANAGEMENT AREAS Where angler-induced mortality appears high compared to natural sources, restricting angler harvest can improve the numbers and sizes of fish available. This is the emphasis behind designating Stream Special Management Areas — to reduce high angler harvest levels so that more and larger fish can grow. If angler harvest is not a significant part of the total fish mortality, changing harvest regulations will yield little improvement in fish sizes and numbers. Also, a stream that allows more harvest can yield just as good or better fishing than restricted harvest areas. Smallmouth bass and goggle-eye regulations are meant to control harvest, not describe where the best fishing is.

MAPS Locations of Stream Black Bass Special Management Areas and other smallmouth stream accesses are available in the Ozark Smallmouth Bass Fishing map, online at ***mdc.mo.gov/node/5876***. Maps of Conservation Department areas and stream accesses are available online at ***mdc.mo.gov*** by accessing the Conservation Area Atlas (bottom left of home page). You may also request a map by emailing our publications staff at *Pubstaff@mdc.mo.gov,* or mail your request to Publications, Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102-0180.

A crew samples smallmouth bass populations on the Elk River in McDonald County. Knowing growth rates and annual mortality rates help biologists predict whether a stream is producing an optimum fishery, or if there is potential for improvement.

This "annual mortality rate" is an important component to shaping the fishery in a water body. Recent Conservation Department-led studies are helping biologists determine how much smallmouth annual mortality is due to angler harvest versus other causes. On average in the U.S., natural mortality rates of smallmouth are around 40 percent. This means that in an un-fished population, if 100 fish were alive at the beginning of the year, only 60 would be left alive at the end of the year, simply due to natural causes (old age, disease, environmental, predation, etc.). Understanding how much mortality is due to angler harvest and modeling the outcomes of altering harvest rates helps biologists determine harvest regulations.

Anglers and biologists alike want to see that quality fisheries exist wherever possible. To consistently produce a quality fishery, streams need habitat that supports all fish life stages and provides for acceptable growth and survival. With appropriate habitat, a stream can produce good numbers of young fish that grow and survive successive years to become the larger fish that anglers desire. If a stream has only good juvenile fish habitat but lacks adult habitat, or only has good habitat every now and then, fish don't grow well or survive long enough to reach those bigger sizes.

Understanding what a given stream is capable of producing keeps biologists and anglers from having unrealistic expectations. In some streams, a 10-inch smallmouth or 7-inch goggle-eye is a long-lived, quality fish. In other steams, those sizes are more commonplace, and anglers can expect to encounter larger fish more consistently. Knowing growth rates and annual mortality rates help biologists predict whether a stream is producing an optimum fishery, or if there is potential for improvement. Realizing where regulations can improve populations and not create false hopes for anglers is important to the Conservation Department, as we strive to provide quality fishing experiences for all Missourians. ▲

__Jen Girondo__, fisheries management biologist, covers the area around Sullivan. She is the Conservation Department's smallmouth bass working group coordinator. __Craig Fuller__, fisheries management biologist, covers the Lebanon area. __Rick Horton__, fisheries management biologist, covers the Neosho area.

So Many Ways to Fish

Missouri's Ozark streams are great fishing destinations for smallmouth bass and goggle-eye. Anglers primarily wade or float most of these relatively shallow waterways.

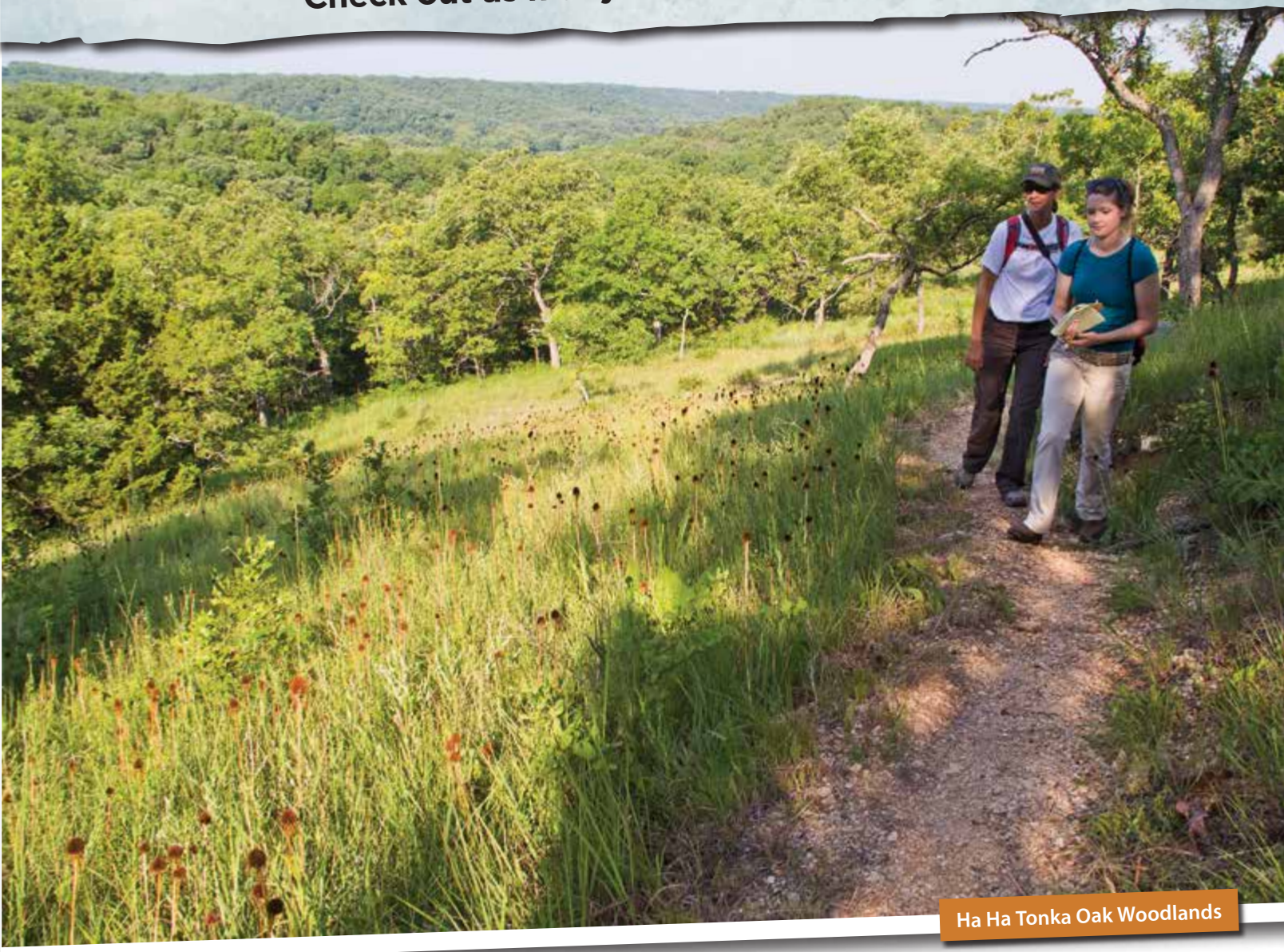
From watercraft such as canoes, kayaks, float tubes, or Jon boats, an angler can fish a considerable amount of stream in a day's time. Floating is also very relaxing, allowing you to simply ride with the current and cast into likely looking areas. Some watercraft are equipped with mounts for electric or outboard motors that allow for boat control and/or access to locations both up and downstream. If you don't own a boat, outfitters who rent a variety of watercraft are available on many of the larger streams in the Ozarks.

Wade fishing is more common along smaller streams that are difficult to access by other means. As you move slowly while wade fishing, you can see wildlife and natural features missed from a boat. Wading anglers often catch large fish since they are able to cast repeatedly into good spots. Many anglers use a combination of floating and wading to access remote reaches of streams. Always ask permission before floating or wading through private property.

Fishing for smallmouth and goggle-eye in Ozark streams can be as simple or complex as anglers want to make it. Anglers can use a cane pole with a few worms and a hook, a pocket full of lures and a spinning rod, or a jet-powered boat with a dozen rods and a mountain of artificial lures. Pole and line, fly casting, spinning/spin casting, or bait casting methods all can be used successfully. Crayfish and small fish are primary prey items for smallmouth and goggle-eye, so capturing a few to use as bait or using lures that imitate them are the best ways to be successful.

Browsing Nature's Library

Check out as many volumes as you like.



Ha Ha Tonka Oak Woodlands

BY JIM LOW

Last year, someone mentioned that the Missouri Natural Area (NA) program began in 1970, when the Department of Conservation set out to preserve the best examples of the Show-Me State's natural communities. That got me thinking how few of the 180-plus natural areas I had visited. Part of my job is helping people connect with places like these. You can't do that without leaving the office. Visiting every NA wasn't practical, so I decided to visit a sample of these remarkable places and then report on what I found.

HA HA TONKA OAK WOODLAND: JIM LOW

Why Natural Areas?

Missourians spent a century taming their wild lands. Why try to save leftover bits and pieces?

Think of forests, prairies, glades, and swamps as libraries. On their shelves are plants and animals whose DNA holds all the ways nature has devised to survive on Earth. Each species is a book containing information found nowhere else. And there is much left to learn about how species interact within their natural habitats.

Allowing every acre of Missouri to be converted to cropland, subdivisions, cities, and highways is the same as discarding most of the books in a priceless and irreplaceable library. We would have plenty of corn, tulips, and cars, but nothing else. Where would we turn for new, life-saving drugs? For plants resistant to pests? For birdsong and butterflies to inspire composers and artists?

Natural Areas include the best — and sometimes the last — examples of Missouri's original forests, prairies, glades, fens, swamps, caves, streams, and geologic features. All but 11 are open to public access. Most of those owned by the Department of Conservation or the USDA Forest Service are open to hunting and fishing. To plan your visit to one or more, visit ***mdc.mo.gov/node/2453***.

Fifty of Missouri's most interesting natural areas are profiled in *Discover Missouri Natural Areas: A Guide to 50 Great Places*, by Mike Leahy, the Conservation Department's natural areas coordinator. This 140-page guide to natural features, plants, animals, and points of interest includes numerous color photos and costs just $9 plus sales tax and shipping and handling. To order, call toll free 877-521-8632 or visit ***mdcnatureshop.com***. Or buy your copy at one of the Department of Conservation's nature centers or regional offices and save shipping and handling charges.

OLDEST

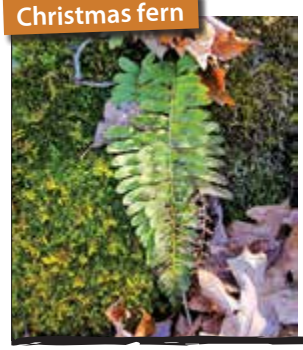
Clifty Creek

Size: 230 acres
Location: Maries County
Designated: 1971
Owner: The L-A-D Foundation

I arrived at Missouri's oldest NA on a January morning that marked the end of a cold spell. The wet bluffs along the area's namesake stream were shrouded with ice flows, and the surface of the creek was a fantastic abstract charcoal drawing.

Not everything was monochrome, however. The area's steep valleys were carpeted with verdant moss and festooned with clumps of Christmas ferns. The occasional cardinal flitting among the greenery recalled the recent holidays.

The 40-foot span of the dolomite natural bridge over Clifty Creek stood out with particular starkness in the winter landscape. It was near noon by the time I finished photographing this remarkable feature, so I broke out cheese, crackers, and venison summer sausage and soaked in the view over a leisurely lunch.



Christmas fern

After noon, the temperature climbed into the 40s, forcing me to shed fleece layers while negotiating switchbacks on the 2.3-mile loop trail. Crows, chickadees, and pileated woodpeckers provided the soundtrack for the hike back to my truck. Even with time spent taking pictures and notes, I was home by late afternoon.

CLIFTY CREEK AND CHRISTMAS FERN: JIM LOW

NEWEST

Ha Ha Tonka Oak Woodlands

Size: 2,995 acres
Location: Camden County
Designated: 2012 (1991)
Owner: Missouri Department of Natural Resources

The contrast between Clifty Creek in winter and this area in summer is stark. Shimmering heat replaces the shimmer of ice, and baked, rocky glades stand in for verdant hills.

The 1834 surveyor's notes for this area describe it as "flinty," "bald," and "unfit for cultivation." But the surveyor failed to note 500 species of native plants flourishing in 13 distinct natural communities. Bird life includes species of continental concern, such as the blue-winged and prairie warblers.

When I visited in July, the blaze of spring wildflowers along the 0.9-mile Acorn Trail had died down to a smolder of coneflower, goldenrod, and bee balm. By midmorning the heat was oppressive, and I was glad to move to the shade of the 1.7-mile Quarry Trail. You can reach this loop by boat, using a courtesy dock at Mile 14.5 on the Niangua Arm of Lake of the Ozarks.

Part of this area was designated as an NA in 1991. An expansion in 2012 tripled the area's size and led to its re-designation, making it the newest part of the system when I was there. Other areas have been added to the system since then and continue to be added.

HA HA TONKA OAK WOODLAND: JIM LOW

"To keep every cog and wheel is the first precaution of intelligent tinkering."
—*Aldo Leopold*, Round River

SMALLEST

Grassy Pond

Size: 1 acre
Location: Carter County
Designated: 1971
Owner: Missouri Department of Conservation

If I had been on my own, I would have mistaken Missouri's smallest NA for a man-made wildlife watering hole. Fortunately, I was with Natural History Biologist Susan Farrington, who pointed it out, noting that the tiny sinkhole pond was holding water for the first time since the awful drought of 2012.

Grassy Pond owes its survival to such dry spells, when fires sweep through the woods, killing woody undergrowth. This prevents the pond from being swallowed up by trees. Even with periodic drought and fire, it's hard to see the pond for the brush. A thicket of buttonbush provides footholds for cypress-knee sedge, a plant that gets all its nutritional needs without soil.


Rose mallow


Ringed salamander

The area also is home to frogs, salamanders, and such state-imperiled plants as bristly sedge, Engelmann's quillwort, feather foil, sharp-scaled manna grass, and floating foxtail grass. The area's most striking feature is rose mallow, which blooms in extravagant profusion here in late summer. With 8-foot stalks and multiple saucer-sized blossoms, the display is something to behold.

"Grassy Pond is a little world of its own," says Farrington. "Even though it's a tiny area, it has a lot of cool stuff. What gets me is how it goes straight from dry chert woodland to wetland."

GRASSY POND: NOPPADOL PAOTHONG; ROSE MALLOW AND SALAMANDER: JIM RATHERT

LARGEST

St. Francois Mountain

Size: 7,028 acres
Location: Iron and Reynolds counties
Designated: 1996
Owner: Missouri Department of Conservation and Missouri Department of Natural Resources

The St. Francois Mountains are among the oldest landforms on Earth, dating back 1.5 billion years, to a time when volcanoes erupted in the sea that then covered much of Missouri. This NA has waterfalls; scattered, enormous granite boulders; Missouri's highest point; several state parks (SPs) and conservation areas (CAs); and a dizzying array of natural communities. I spent four days here in May and barely scratched the surface of its trails and stunning vistas.

I was lucky to arrive the day after a rain and found Mina Sauk Falls cascading 132 feet to the creek below. I had the trail almost all to myself that Thursday afternoon. The only exception was a 3-foot timber rattlesnake that was sunning on the bare rock path.

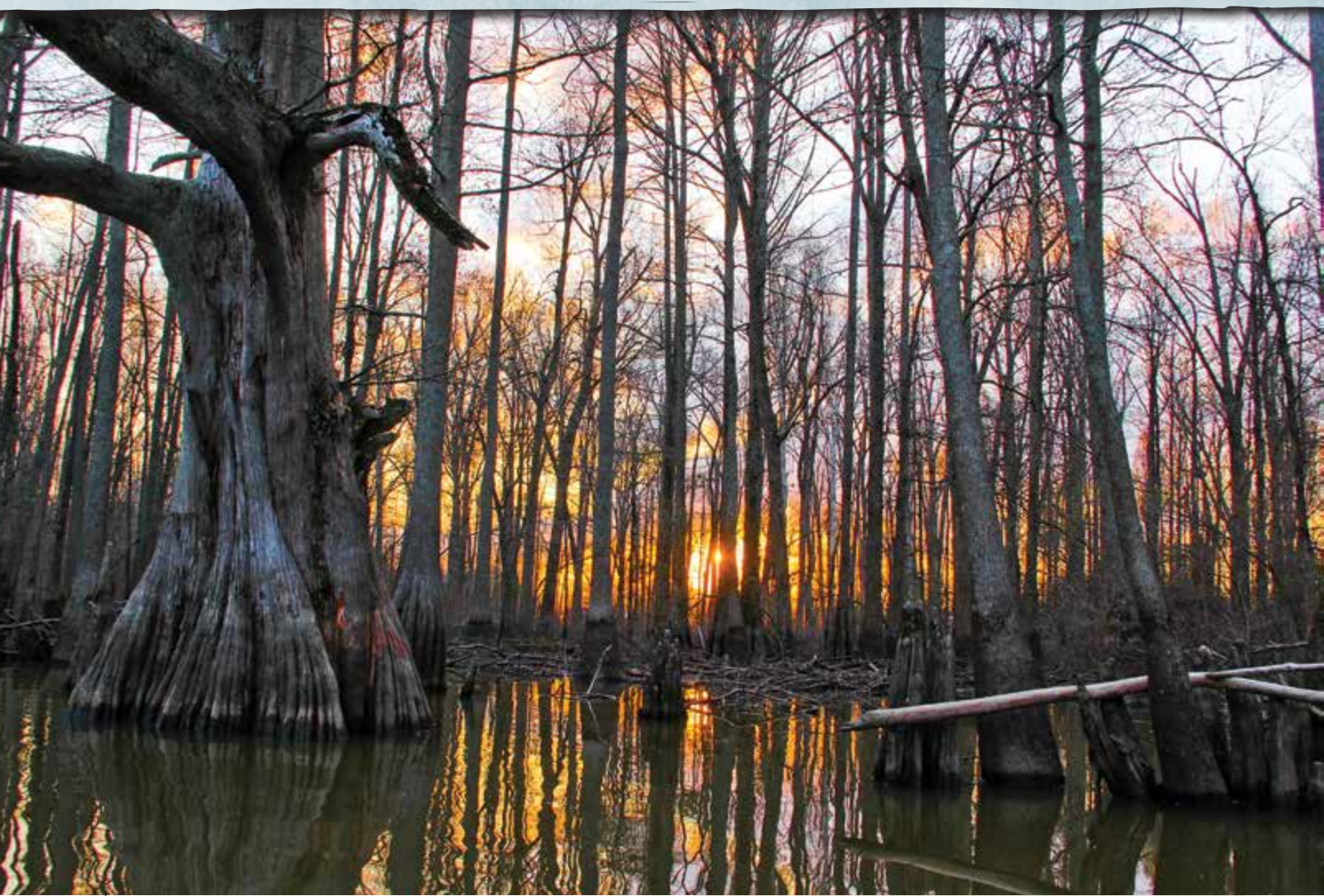
I saw migrating warblers and wildflowers too numerous to describe. Visiting Johnson's Shut-Ins SP, I was astonished at its recovery from the collapse of Taum Sauk Reservoir in December 2005. Elephant Rocks SP provided a great place to eat lunch.

Features that will have to wait for my next visit include the Devil's Tollgate, Taum Sauk Mountain's 1,772-foot peak, 12 miles of the Ozark Trail, and the stark beauty of Ketcherside Mountain CA.

Mina Sauk Falls

Timber rattlesnake

ST. FRANCOIS MOUNTAIN, MINA SAUK FALLS, AND SNAKE: JIM LOW



WETTEST

Allred Lake

Size: 76 acres
Location: Butler County
Designated: 1982
Owner: Missouri Department of Conservation

Allred Lake is a tiny remnant of the vast cypress swamp that once cloaked Missouri's Bootheel Region. You can still see ledges cut into the bases of giant cypress stumps where loggers placed planks to stand on while using 8-foot crosscut saws to fell swamp monarchs. The loggers left standing equally ancient cypresses that had less commercial value because of flawed trunks.

Swamp rabbit

These remaining trees were old in 1541, when Hernando de Soto scoured the region for gold and a new route to China. To paddle a canoe among massive knees of these giants at sunrise is to glimpse the primeval wilderness that de Soto and his conquistadores beheld. Swamp darters, green tree frogs, western lesser sirens, and swamp rabbits still haunt this mysterious piece of not-quite land, nor yet water.

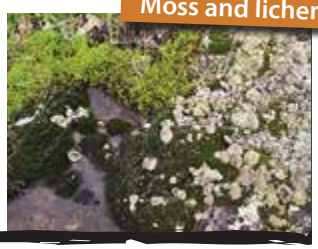
ALL RED LAKE: JIM LOW; SWAMP RABBIT: JIM RATHERT

DRIEST

Dave Rock

Size: 44 acres
Location: St. Clair County
Designated: 1987
Owner: Missouri Department of Conservation

The only water you are likely to find on these areas is in shallow puddles after a rain. True to its name, Dave Rock has a 15-acre sandstone dome that is made to order for a family picnic, with plenty of smooth rock for kids to scramble around. They will be intrigued by tiny erosion canyons and round basins that runoff has carved in the soft sandstone. The edges of the dome are decorated with a lacework of moss and lichens that somehow maintain toeholds on the bare rock. Keep a sharp eye out and you might spy a 4-foot eastern coachwhip snake or a prairie racerunner lizard.



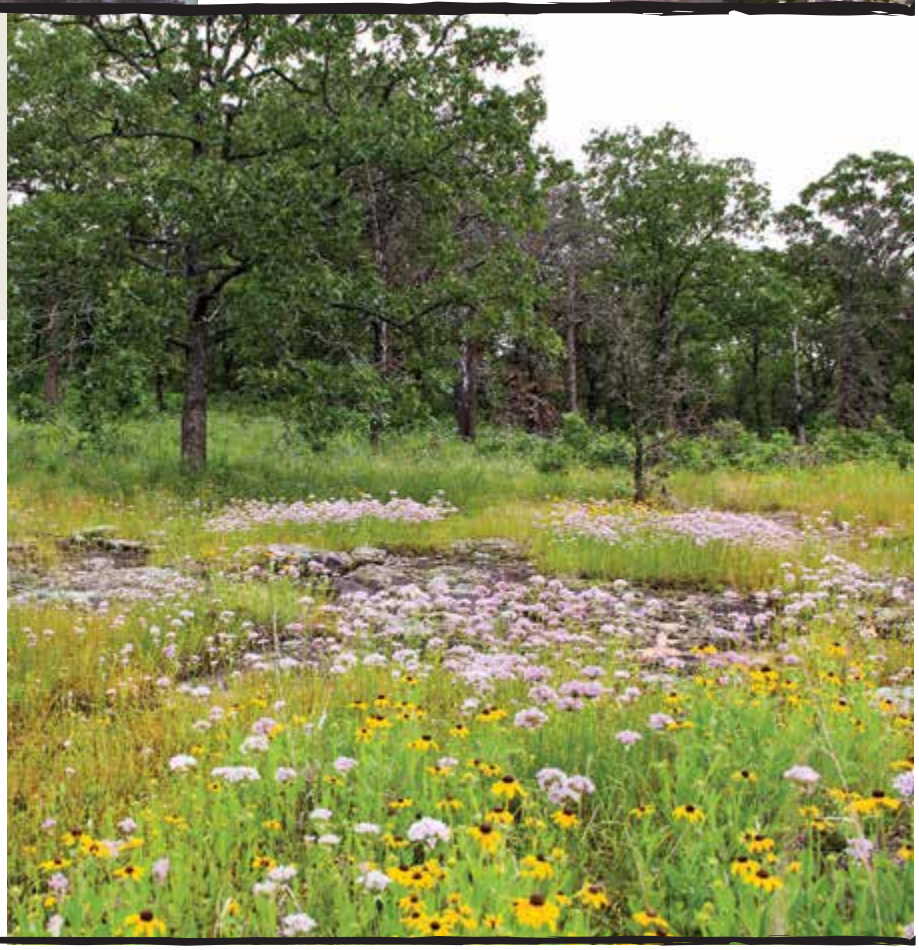
Moss and lichen

DRIEST

Lichen Glade

Size: 26 acres
Location: St. Clair County
Designated: 1975
Owner: The Nature Conservancy

Lichen Glade was awash in allium, black-eyed Susan, spiderwort, and great-spangled fritillary butterflies when I visited in June. A gentle breeze made the whole area look like a wavy pastel sea. Charred cedar stumps and limbs attested to the effectiveness of fire in defending these glades against woody invasion. Where they can sink a taproot into a crevice, tenacious eastern red cedars survive for hundreds of years. Pruning by wind, drought, and fire impart shapes that a master bonsai gardener might envy.



DAVE ROCK, MOSS AND LICHEN, AND LICHEN GLADE: JIM LOW

MOST RUGGED

Caney Mountain

Size: 1,330 acres
Location: Ozark County
Designated: 1990
Owner: Missouri Department of Conservation

Rugged is too mild a word to describe this uncompromising chunk of real estate. Serious hikers can scale High Rock, Bear Cave, Tater Cave, and Long mountains. Birders are always watching for the rare Bachman's sparrow on glades. Prairie warblers, yellow-breasted chats, blue-winged warblers, collared lizards, and scorpions also inhabit glades. And don't be surprised if you glimpse a roadrunner zipping across the rocky landscape in search of lizards.

Caney Mountain has history, too. Gazing out over Long Bald, with its riot of coneflowers and butterflies, gives you a spectacular view of the Gainesville Monadnocks, conical peaks that explorer-journalist Henry Rowe Schoolcraft glimpsed on his storied tour of the area in 1818. A mile from the area's east entrance is a log cabin where Starker Leopold, the eldest son of conservation luminary Aldo Leopold, stayed while developing Missouri's first turkey restoration plan. This rugged landscape harbored some of the state's last surviving turkeys before creation of the Department of Conservation. Turkeys live-trapped here became seed stock for Missouri's enormously successful turkey restoration program.

Blue-winged warbler

Starker Leopold's log cabin

CANEY MOUNTAIN AND LOG CABIN: JIM LOW; BLUE-WINGED WARBLER: JIM RATHERT

TABERVILLE PRAIRIE: JIM LOW

FLATTEST

Taberville Prairie

Size: 1.360 acres
Location: St. Clair County
Designated: 1971
Owner: Missouri Department of Conservation

A summer sunrise on Taberville Prairie is heard as much as seen. Dickcissels, indigo buntings, bobwhite quail, and Bell's vireos begin reciting soliloquies when daylight is only a promise in the east. Listen closely and you might detect the weird, burbling flute of a prairie chicken. As the sun steals up toward the horizon, clouds capture its yet-unseen rays and explode in incandescent mauve, pink, scarlet, and orange. Prairie rose, phlox, spiderwort, coreopsis, and pale purple coneflower wave in the chest-deep prairie grass, whispering a greeting to the day.

Gladey rock outcrops sport larkspur, allium, and prairie beard-tongue. Federally threatened geocarpon grows here, too. Standing on one of these barren patches, I spied a turkey vulture gliding straight toward me, barely 8 feet off the ground. I froze, and the bird, focused on the ground beneath him, came within 20 feet of me before realizing I wasn't a tree and careened away in an undignified flap.

It seemed odd to find a marsh in the draw where Baker Branch flows. You can credit industrious beavers for this addition. I discovered a mourning dove nesting on the ground at the foot of an 18-inch cherry tree sprout but was sorry not to encounter any western slender glass lizards, Missouri's only legless lizard.

Send me a picture if you see one. ▲

Since signing on as news services coordinator in 1990, ***Jim Low*** *has had the opportunity to visit many of the Conservation Department's more than 1,000 areas. He hopes to see many more after retiring at the end of this year.*

COMMITTED TO COMMU

DAVID STONNER

NITY TREES

Surveys show that Missourians support urban forestry initiatives.

BY NICK KUHN

St. Louis has a long history of managing trees with an extensive street and park system.

Missourians love nature.

We love our forests, fish, and wildlife for both common and personal reasons. Whether out in the woods or in the heart of our cities, we desire that connection. So we value city parks, greenway trails, tree-lined city streets and our backyard retreats — but these resources do more than just improve the view, especially in regard to our urban trees.

Trees in the city provide extensive and measureable social, environmental, and economic benefits. Unfortunately, not everyone is aware of these services. In order to better serve our citizens, and share the importance of our urban trees, we sent out an opinion survey.

The Department of Conservation's Resource Science and Forestry divisions teamed up to develop the survey and learn how to better serve Missourians. Our goal was to determine citizens' most pressing issues, gauge support for two hypothetical ballot issues, and find out how much citizens knew about tree programs in their communities. We also asked city leaders about their local agencies charged with managing urban trees, their budgets and personnel levels, and to determine which urban forestry issues were priorities. The responses to these questions revealed encouraging trends for our future.

Don't Hold Back

Surveys were distributed in 2004 and 2012 to assess the opinions of citizens and city leaders. While the surveys were short, less than 20 questions, we learned a lot about how people felt about trees and how far they would go to have and care for trees in their yards or on city streets. This information is valuable to urban forest managers, city planners, political leaders, road and storm-water engineers, and other professionals working in our communities. Two cycles of surveys, each statistically representing all Missouri communities and residents, provided solid insight on opinions and trends.

Key trends for residents and public officials show communities are getting more trained staff to manage their trees, that residents are willing to pay taxes for city managed trees, that trees should be protected during urban development, and that fewer people think tree topping is a healthy practice for trees. Most importantly, Missourians think trees are part of a city's infrastructure and just as important as streets and utilities.

The resident survey results show high importance for trees along streets and parks, for cleaning of our water and air, planting and care of new trees, and pruning for tree safety. Across all city sizes, 53 percent of Missourians said they would pay some level of tax, with 23 percent undecided. All city sizes of more than 50,000 residents were willing to pay a tax of $35 or more per year to manage trees for health and safety. Past results from the 2004 survey compared to 2012 show that people are becoming more aware of tree benefits to their homes and communities as well as the needs of planting, caring, and conserving this valuable resource.

The officials' survey showed similar priorities with added concerns for funding and planning. Cities have been hiring or training more professionals, more than 25 percent have rules regarding tree preservation, and more than 50 percent say tree maintenance, planting, and

IN 10 YEARS, CITIES WITH CARE POLICIES FOR PUBLIC TREES INCREASED FROM **22 PERCENT** TO **37 PERCENT**. CITIES WITH TREE PROTECTION POLICIES WENT FROM **12 PERCENT** TO **50 PERCENT**. THESE NUMBERS SHOW HOW IMPORTANT THIS ISSUE HAS BECOME.

URBAN LANDSCAPE: CLIFF WHITE; JOPLIN TREE PLANTING: NOPPADOL PAOTHONG

hazard tree removal is important. Results also showed that more communities are making an effort to keep trees safe and employ professional guidance and rules to help guide their activities. In 10 years, the number of cities with care policies for public trees increased from 22 percent to 37 percent. Cities with tree protection policies went from 12 percent to 50 percent. These numbers show how important this issue has become to both residents and city leaders in our growing urban areas. City leaders are prioritizing urban forestry and keeping natural resources healthy.

Caring for Community Trees

Communities across the state have used urban forest programs to improve the livability and value of neighborhoods. Kansas City works hard to keep trees healthy for residents and visitors and is currently making a strong response to an emerald ash borer outbreak. St. Louis has a long history of managing trees with an extensive street and park system. Cities in every Department of Conservation region, including Springfield, Columbia, Liberty, Cape Girardeau, Hannibal, St. Joseph, Houston, and St. Peters, all manage trees at some level. Joplin has joined this group by hiring a city forester, having learned the benefits of trees after losing so many.

Demographics of respondents show more than 80 percent are homeowners and more than 60 percent are between 36 to 65 years old, educated, and have been raised inside some city limits. The survey shows that people feel a community should be responsible for its trees.

Cities across the state are hiring or training more forestry professionals. Joplin hired a city forester, having learned the benefits of trees after losing so many in the F5 tornado that hit the community in May 2011.

When our cities were first started, trees were everywhere. They were planted for the shade, food, and fuel they provided. Some of the benefits of trees to homeowners were replaced by insulation, technology, and supermarkets. Trees then seemed optional and not as important. However, for us to live as cost effectively as possible, its in our best interest to use both new technology and nature to provide the highest possible return on our investments. Consider your town's streets and parks. Trees shade and add value to your home, they improve the neighborhood, and they clean water, soil, and air. They are an excellent investment for individuals and communities alike. City residents are a key factor in keeping trees a priority. Show your support by caring for your own trees, being active in your community, and telling city officials and other leaders that you support maintaining this valuable resource. ▲

***Nick Kuhn** is the community forestry coordinator for the Department of Conservation.*

The Tides of Change in Missouri Deer Management

The Department of Conservation addresses new challenges to herd health.

BY JASON SUMNERS

The white-tailed deer population in Missouri has seen significant change over the past 100 years, and so have management priorities.

Pre-1930s: Decline of the Herd

Presettlement, white-tailed deer were found throughout the state. However, like many wildlife species in the latter half of the 19th century, deer numbers declined with European settlement. The decline occurred at a time when humans were affecting the Missouri landscape on a scale never before experienced. Throughout much of Missouri, forests were cut, most accessible land was grazed or farmed, and people were scattered on small parcels across the rural landscape. Deer numbers declined to a low of approximately 400 deer in 1925.

1930s–1980s: Restoration of the Herd

In the early 20th century, attitudes toward wildlife shifted from a utilitarian to a more conservation-oriented emphasis. As a result, we entered the modern era of wildlife management and made species recovery a priority.

Although there had been small increases in deer numbers since the low in 1925, the creation of the Department of Conservation and the Conservation Commission initiated the first significant and successful efforts to protect and restore deer and many other wildlife species. In 1938, the Commission put into place several programs that stimulated rapid growth of the deer population, and by 1944 there were an estimated 15,000 deer in Missouri. As a result, the Conservation Commission established the first modern-day firearms hunting season in 1944.

NOPPADOL PAOTHONG

Deer management at the time was relatively simple because the primary objective was to increase deer populations, which could be accomplished in large part by protecting does from harvest.

1980s–2010s: Rapidly Growing Herd

By the late 1980s, deer populations across much of the state were growing rapidly, leading to increased crop damage, deer/vehicle collisions, and the emergence of urban deer issues. This era of rapid population growth was met with liberalization of regulations and expanding hunting opportunities by lengthening seasons, establishing new portions to seasons, increasing bag limits and permit availability, and implementing restrictions on buck harvest in the form of the antler point restriction. All of these changes were intended to slow population growth by increasing harvest pressure on does.

Concerns over hunter recruitment and retention began to emerge as many states began to see declines in hunter numbers. Hunters are the primary tool of deer management and fewer hunters means a reduced capacity to manage a growing deer population. Therefore, numerous efforts to recruit new hunters were implemented.

2010s and Beyond: Localized Population Management

By 2010, changes in regulations (longer seasons, new portions, antler point restriction, increased antlerless permits) were affecting deer populations. Significant losses due to hemorrhagic disease in 2007, 2012, and 2013 resulted in stable or reduced deer populations in many parts of central, northern, and western Missouri. Across much of southern Missouri, deer populations continue to grow slowly, though they largely remain below biological and social carrying capacity.

Traditionally, deer management focused on increasing deer numbers on a large geographic scale, which was relatively simple to accomplish through limited harvest quotas. Now, the focus has shifted to achieving localized population goals, which is more complicated.

Establishing Deer Management Goals

The goal of the deer program is to use science-based wildlife management to maintain biologically and socially balanced deer populations throughout the state that provide recreational opportunities and minimize human-deer conflicts and potential negative effects on ecosystem health. Reaching deer management goals is more challenging today due to the complexity of interrelated factors such as land use, ownership, hunter density, and human population levels. Therefore, the Department of Conservation's regulatory process incorporates both science-based information and citizen feedback. The Department uses hunter surveys, production landowner surveys, bowhunter observation surveys, deer population simulations, biological data, harvest summaries, and public comments when determining deer management goals for a particular county. If goals aren't being met, regulation changes are proposed.

In many areas where deer populations are low, we will propose a reduction in firearms antlerless permits for the 2014–2015 deer season to allow populations to stabilize or increase. However, in response to growing deer populations in parts of southern Missouri we will propose increases in antlerless permits in select counties.

White-Tailed Deer Management Plan

In response to the evolving challenges to deer management in the 21st century, we have drafted a deer management plan to outline the current priorities of Missouri's deer management program and direct deer management over the next 10 years. The plan has four primary goals for deer management in Missouri: 1) Deer Population Management, 2) Hunting and Recreation, 3) Deer Health and Disease, and 4) Education, Communication, and Public Engagement.

In next month's issue of the *Conservationist* we will discuss the draft deer management plan, proposed approaches to deer management in the future, and detail our plans to gather public input. ▲

***Jason Sumners** joined the Conservation Department as a deer biologist in December 2008. He lives with his family in Columbia.*

Mink

SEVERAL YEARS AGO, while photographing belted kingfishers in St. Louis' Forest Park, I discovered a mink den. Often, one of the busy little creatures would swim across the creek and land at my feet, where it would study me with great curiosity as I sat motionless in my hide among the weeds. I rarely captured an image because they usually emerged too close for my telephoto lens. By the end of the summer, I finished my kingfisher project and began making plans for the following spring when my focus at the site would be mink (*Mustela vison*).

By spring of the following year I began thinking about minks again, and I consulted my Department of Conservation Natural Events Calendar to determine when I could expect maximum mink activity. I began making regular trips to the site in May and saw the minks almost immediately as they tended to the needs of their new kits. Mink are nocturnal, so I was always in my hide before daylight, hoping to catch them extending their crayfish hunts a little past sunrise. As the summer progressed, the minks accepted me as a non-threatening part of their environment, oblivious to the furtive glances of my lens and the unnatural clicks of my shutter.

If you ever observe a mink in the wild, the first thing you will notice is that it rarely stops moving. A little longer than 2 feet from nose to tail, and weighing less than 3 pounds, minks are bursting with energy. They are always on a mission, usually involving food acquisition, and they seldom frolic and play like river otters. Mink are a rich brown in color with a white throat patch and a bushy tail. Their feet, which are partially webbed, are impressive in size as compared to the rest of their body.

Minks live near permanent water along streams, lakes, ponds, and wetlands. They make their dens in a variety of places, including tree roots, bank cavities, logs, and stumps. Mating occurs in late winter and young are born in spring. I began seeing the kits running with their parents by mid-July. Minks feed on a variety of prey including crayfish, fish, rabbits, and mice. One of the first things I noticed about their feeding style is that as soon as they catch their prey they make a dead run back to the den. I've never seen a mink eating its prey in the open. Minks are considered common in Missouri, where good habitat exists. Their harvest as furbearers is regulated.

As the summer progressed, I had many encounters with the family of minks. As had happened the year before, individuals often approached very close to inspect me and my equipment, sniffing nonstop. On more than one occasion, a busy mink would run right across my feet before it finally turned to look back at me from a fair distance. It was during those moments that I made my best images, capturing the inquisitive facial expressions of these beautiful, urban mammals.

—Story and photograph by Danny Brown

500mm lens + 1.4 teleconverter• f/5.6 • 1/60 sec • ISO 200

We help people discover nature through our online field guide. Visit mdc.mo.gov/node/73 *to learn more about Missouri's plants and animals.*

Honey Creek Conservation Area

This riverside area in Andrew County boasts 13 miles of hiking, biking, or horseback-riding trail through field, forest, and savanna.

HONEY CREEK CONSERVATION Area (CA) is a 1,448-acre tract nestled alongside the Nodaway River, two miles north of where Lewis and Clark passed by in 1804. The area was purchased in 1961, and it is managed to promote a diversity of wildlife while providing ample opportunity for the public to enjoy that diversity through hiking, camping, and wildlife viewing.

This large conservation area is home to a variety of habitat types that are maintained to appeal to a wide range of wildlife. Forest, woodland, and savanna are wooded communities found on the area; these communities have varying levels of tree density, and each can appeal to different wildlife. Wooded areas are complemented by open fields and food plots, or small crop fields grown to provide food and shelter for wildlife such as white-tailed deer and wild turkey. The 1.4 miles of river frontage on the southwest corner of the area also provides unique primitive camping and quality catfishing opportunities.

The 13-mile Honey Creek Multi-Use Trail consists of two portions that allow hiking, biking, and horseback riding. Trail A meanders through the northern half of the area and is approximately 5.5 miles, while Trail B circles the southern portion and is about 7.5 miles. The trail system includes area roads and fields with many accesses to shorten or lengthen a trek. The trails wind through oak-hickory forest and open fields accented by rocky sections where switchbacks on steep terrain help hikers and bikers to navigate the slopes. Birdwatchers and horseback riders are common sights along the trail in the spring and summer months.

70–200mm lens • f/2.8 • 1/160 sec • ISO 320 | by David Stonner

Along the southwest portion of Trail B, scenic overlooks of the Nodaway River valley beckon hikers, bikers, and horseback riders. Shaded resting areas with hitching posts along both trails provide some relief from hot summer days, and fall tree colors are spectacular. Other natural features on the area include numerous draws and creeks that flow after a rain. Honey Creek CA also hosts a primitive campground at the area entrance with additional hitching posts, fire rings, and an ADA-accessible privy.

Honey Creek CA is located approximately 18 miles north of St. Joseph on Route RA, off the I-29 Fillmore exit.

—Sean Cleary, area manager

Recreation opportunities: Hiking, biking, horseback riding, kayaking, fishing, hunting in season, wildlife viewing, picnicking, and bird watching

Unique features: This area features 1.4 miles of Nodaway River frontage and 13 miles of multi-use trail for hikers, bikers, and horseback riders.

For More Information Call 816-271-3100 or visit ***mdc.mo.gov/a6127***.

MDC

DISCOVER nature

7 IDEAS FOR FAMILY FUN

To find more events near you, call your regional office (see Page 3), or visit *mdc.mo.gov* and choose your region.

RIVER CLEAN UP

MAY 3 • SATURDAY • 8 A.M.–NOON

Southeast Region, Red Star Access pavilion, Water St., Cape Girardeau, MO 63701

Registration required, call 573-290-5218

Ages 12 and older

Help us clean up the banks of the mighty Mississippi River. The river is a great place to view wildlife, watch the river flow, and just hang out — especially when it's not being obscured by trash. Participants may be transported by boat to other areas of the riverbank.

TEN YEARS, 10 WAYS TO CELEBRATE!

MAY 4 • SUNDAY • NOON–6 P.M.

St. Louis Region, Columbia Bottom Conservation Area, 801 Strodtman Rd., St. Louis, MO 63138

Registration required, call 314-877-6014

All ages, families

For a decade, the Howard and Joyce Wood Education and Visitor Center has served Columbia Bottom CA as a gateway to discovery. Celebrate the "wood shed's" anniversary with a hayride, scavenger hunt, bike hike, sunrise or sunset walk, and more. Check out the full schedule of activities at ***mdc.mo.gov/node/298***.

BASIC HANDGUN SHOOTING & SAFETY FOR WOMEN

MAY 6 • TUESDAY • 5:30–9:30 P.M.

Central Region, Ammo Alley, 11562 County Rd. 395, Hartsburg, MO 65039

Registration required, call Brian Flowers at 573-815-7901, ext. 3388 or email **Brian.Flowers@mdc.mo.gov**

Ages 18 and older

Learn the basics of handgun safety, hunting, shooting techniques, equipment, and much more. Classroom lessons will be followed by mentored shooting at a local indoor shooting range.

WINGS OVER WESTON

MAY 10 • SATURDAY • 9 A.M.–3 P.M.

Northwest Region, Weston Bend State Park, 16600 Highway 45 North, Weston, MO 64098

No registration

All ages

A free festival for the whole family. No one is too young or old to learn about birds, monarchs, migration, and habitat. There will be activities for everyone, including games, arts and crafts, and guided hikes.

CONSERVATION KIDS CLUB: TAKE YOUR PARENT CAMPING

MAY 16 • FRIDAY • 6 P.M.–
MAY 17 • SATURDAY • 8 A.M.

Kansas City Region, Burr Oak Woods Conservation Nature Center, 1401 NW Park Rd., Blue Springs, MO 64015

Registration required, beginning May 1, call 816-228-3766

Ages 7–13, with parent(s)

Kids, have you always wanted to go camping at Burr Oak Woods CNC? Whether you are an old hand at camping or you have always wanted to try it, this campout is for you. Don't miss out on this special evening under the stars. Activities include canoeing, fishing, stories, and songs around the campfire.

LET'S GO FISHING

MAY 19 • MONDAY • 10 A.M.–NOON

St. Louis Region, Forest Park, 5595 Grand Dr., St. Louis, MO 63112

Registration required, beginning May 5, call 314-877-1309

Ages 7–12, with parent(s)

Learning the basics of fishing. All equipment will be provided as we fish for catfish, bass, or sunfish. This program meets at the Educational Fishing Lakes and Hatchery. Bring a water bottle and dress for the weather, rain or shine.

WILD EDIBLES

MAY 31 • SATURDAY • 9 A.M.–2 P.M.

Ozark Region, Twin Pines Conservation Education Center, Route 1, Box 1998, Winona, MO 65588

Registration required, call 573-325-1381 or email **twinpinescenter@mdc.mo.gov**

All ages

Includes identification, preparation, and cooking instructions. Taste samples of nature's bounty throughout the seasons.

DISCOVER NATURE PHOTO CONTEST

Show the world your idea of discovering nature in Missouri. Using your Google+, Instagram, or Twitter account, tag your Missouri nature photos with "#MDCdiscovernature." Your photos will appear on our website at ***mdc.mo.gov/node/26255***, where you can also read the contest rules. Every month, Department staff will select and post a winning photo. We'll publish all of the monthly winners in the January 2015 issue of the *Conservationist*.

Subscribe online • *mdc.mo.gov/node/9087* • Free to Missouri households

I Am Conservation

Jack Hilsabeck removes a blue-headed vireo from a mist net near his home in St. Joseph. Hilsabeck has been federally licensed to band birds since 1971. He became interested in birding in the summer of 1967 while he was in college. Soon after, he pursued his federal bird-banding permit from the U.S. Geological Survey. Hilsabeck taught high school biology at North Andrew High School in Rosendale for 35 years before retiring in 1998. "North Andrew was a good fit for me because the school building was within 200 yards of the One Hundred and Two River," said Hilsabeck. "The One Hundred and Two periodically was out of its banks and left some very interesting habitats for my students to study." There was also an out-of-commission railroad track nearby that provided an ideal place for his students to set bird nets. After retiring from North Andrew, Hilsabeck taught ornithology and bird identification courses at Missouri Western State University in St. Joseph. Hilsabeck has continued banding birds with his college students. "Since 2001, we have banded over 6,000 birds on the college campus," said Hilsabeck. "We are studying the mass gain of Neotropical birds at stopover sites on or near our campus as they migrate through Missouri in the fall." Hilsabeck will soon be 73, and he has enjoyed fishing, hunting, and trapping in Missouri for most of his life. "One of the greatest enjoyments in my life has been teaching others about birds and the enjoyment of birding," he said. —*photograph by Noppadol Paothong*